NOTES ON NOMENCLATURE AND TYPE-SPECIMENS OF AUSTRALIAN PYRGOTIDAE (DIPTERA, SCHIZOPHORA)

By David K. McAlpine
The Australian Museum, Sydney

Abstract

Nomenclature of pyrgotid flies is considered with particular reference to the type material of P. J. M. Macquart. Paratoxurinae Steyskal is a new synonym of Toxurinae Malloch (as Toxurinii). *Paratoxura* Paramonov is a new synonym of *Toxura* Macquart. *Urophora testacea* Macquart and *Paratoxura secreta* Paramonov are new synonyms of *Toxura maculipennis* Macquart. *Epicerella* Macquart, *Parepicerella* Hendel, *Sestroptera* Enderlein, *Pyrgella* Paramonov, and *Musgravena* Paramonov are new synonyms of *Cardiacera* Macquart. *Epicerella plagiata* Bezzi is a new synonym of *Cardiacera dispar* Macquart. *Cardiacera anthonyi* (Paramonov) is restored from synonymy in *C. nova* (Walker). Lectotypes are designated for *Toxura maculipennis* Macquart, *Cardiacera dispar* Macquart, and *Cardiacera nova* Walker. A list of new generic combinations is appended.

Introduction

The last comprehensive work on Australian pyrgotids is that of Paramonov (1958a). Further information on the family has been provided by Paramonov (1958b), and Steyskal (1965, 1968). I now find it necessary to make several corrections to the nomenclature of the family.

Subfamily Toxurinae

Toxurinii Malloch 1929
Paratoxurinae Steyskal 1968: 147.

Steyskal altered the name of this group following the claim of Paramonov (1958a) that *Toxura* was a tephritid (trypetid) genus. Because Paramonov was mistaken, as shown below, the name must revert to that used by Malloch.

I am not convinced that the genera included in this subfamily form a natural group equivalent to the Pyrgotinae. The only distinguishing character, the angular bend in the distal part of the subcosta, is apparently not always to be relied upon as an indication of relationships, and support for the grouping from other characters is minimal. A thorough morphological study of the pyrgotid genera is needed before the interrelationships of genera placed currently in Pyrgotinae and Toxurinae can be understood.

Genus *Toxura* Macquart

Toxura Macquart 1851: 289-290. Type-species *T. maculipennis* Macquart.
Paratoxura Paramonov 1958a: 110. Type-species *P. norrisi* Paramonov. **N. syn.**

Malloch (1929) interpreted *Toxura* as a pyrgotid genus, identifying a specimen, of which he figured the wing, as *T. maculipennis.* Paramonov contended that Malloch had misidentified the type species of *Toxura* and that *Toxura* was really a tephritid and not a pyrgotid. Paramonov had not seen a female of the pyrgotid genus under consideration and thought that Macquart's illustration

(1851: pl. 26, fig. 18) could only represent the abdomen of some unidentified tephritid. He therefore redescribed the genus as new under the name *Paratoxura*. My study of the type material of *T. maculipennis* in the Paris Museum absolutely confirms Malloch's interpretation of the genus, so that *Paratoxura* must be a synonym of *Toxura*. Though highly inaccurate in detail (as is usual for the illustrations in *Diptères exotiques*) Macquart's contentious figure does show some characteristic features of the female abdomen in this genus, notably the enlarged, scoop-like sternite 2 and the elongate, curved segment 7 (ovipositor sheath), though the slenderness of the latter is exaggerated. *Toxura micropa* Hendel is at best an outlying member of this genus, having a distinct presutural bristle, extensively haired mesopleuron, and shorter abdominal segment 7 of ♀. The female has, however, the particularly long tarsal claws, almost straight over much of their length, characteristic of this sex in *Toxura*, and the species is probably more closely related to this than to any other named genus.

Toxura maculipennis Macquart

(Figs 1, 2)

Toxura maculipennis Macquart 1851: 290, pl. 26, figs 18, 18a; Malloch 1929: 24, fig. 3.

Urophora testacea Macquart 1851: 287, pl. 26, fig. 12. N. syn.

Paratoxura secreta Paramonov 1958a: 111-112, fig. 10. N. syn.

As first reviser under Article 24 (a) of the International Code, I choose the name *T. maculipennis* in preference to *U. testacea* of Macquart's two simultaneously published synonyms.

This may be distinguished from other species of *Toxura* I have seen by the following characters: face with pair of black stripes; antennal segment 3 subacute to acute; mesoscutum with only one pair of dark (black) stripes, interrupted at suture; humeral bristle long and fine; mesopleuron bare except on posterior margin.

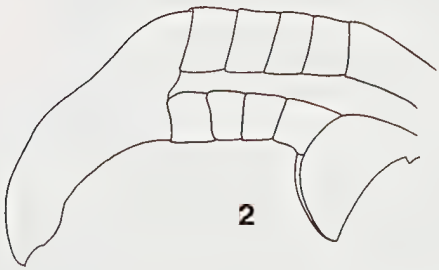
Though there is no doubt that the specimen determined by Malloch as *T. maculipennis*, the wing of which is illustrated, belongs to the same narrow group of species as this, Malloch's published data are too meagre to enable certainty as to the correctness of his specific identification. The specimen is now apparently lost as it is not in any of the collections where it might be expected to be found (School of Public Health and Tropical Medicine, Australian Museum, British Museum (Natural History), Australian National Insect Collection (C.S.I.R.O.), or United States National Museum).

The type of *Urophora testacea* agrees in all significant details with the types of *T. maculipennis*.

Paramonov did not mention a type specimen for his *P. secreta*. However he expressly introduced this name as a replacement name ("nom. nov.") for "*Toxura maculipennis* Malloch (nec Macquart), 1929.," though he had seen neither Malloch's nor Macquart's material. Under these circumstances Article 72 (d) is the only rule in the International Code which can be invoked to determine

which is type material, and this indicates unambiguously that the new name has the same type material as the name it replaces. As Malloch's *T. maculipennis* has no separate nomenclatural status, its type material can be only that of *T. maculipennis* Macquart. Though application of this rule sets aside the stated intention of Paramonov, the possibility of its setting aside the intentions of the author of a new name is explicit in the wording, and it should be upheld.

Type material examined: "Tasmanie", reg. no. 3/47 (lectotype ♀, here designated, of *T. maculipennis*, paralectotype ♀, Paris Museum), J. P. Verreaux (the paralectotype is the specimen in poorer condition, but bearing a printed red "TYPE" label); "Tasmanie" (published locality, not on label) reg. no. 3/47 (holotype ♀, head missing, of *Urophora testacea*, Paris Museum), J. P. Verreaux. Though not all of Verreaux's supposedly Tasmanian material is correctly labelled (McAlpine, 1973: 180-181), the material of this species is probably correctly localised. A further ♀ from Saint Patrick's River, Tasmania (South Australian Museum) is evidently conspecific, but is distinct from the few specimens of *Toxura* from the Australian mainland available to me.



Figs 1, 2. *Toxura maculipennis*, lectotype ♀: (1) head, freehand, proboscis and minor hairing omitted; (2) abdomen, vestiture omitted.

Genus *Cardiacera* Macquart

Cardiacera Macquart 1847: 92, 99, 101, pl. 6; 1851: 362. Type-species *C. dispar* Macquart.

Cardiocera Macquart 1847: 92 (variant spelling of above); Paramonov 1958: 107-108.

Epicerella Macquart 1851: 293-294. Type-species *E. guttipennis* Macquart. N. syn.
Parepicerella Hendel 1934: 145. Type-species *Epicerella miliacea* Hendel. N. syn.
Sestroptera Enderlein 1942: 100. Type-species *Epicerella multipunctata* Malloch. N. syn (see Paramonov 1958a: 124).
Pyrgella Paramonov 1958a: 116. Type-species *P. calabyana* Paramonov. N. syn.
Musgravena Paramonov 1958a: 117. Type-species *M. anthonyi* Paramonov. N. syn.

Of the two spellings used by Macquart in the original publication, *Cardiacera* must be used as that chosen by Macquart (1851) as first reviser in accordance with Article 24(a) of the International Code. Despite the view of Paramonov, it must be noted that the alternative spelling appears only once, apparently as a lapsus calami.

Though most species of this genus have been referred to the genus *Epicerella*, the type species of this nominal genus is congeneric with that of *Cardiacera*, as shown from my examination of type material of both *C. dispar* and *E. guttipennis* at the University Museum, Oxford.

Also *Parepicerella* must be synonymised because its type species is only doubtfully distinct from that of *Epicerella* (see under *C. guttipennis*, p. 31).

Paramonov included in his genus *Pyrgella* two species which from his key may be judged to differ from the species he placed in *Epicerella* in the deeply sunken keel on the upper part of the face and the less strongly developed wing markings. However there are species included by Paramonov in *Epicerella* which quite closely approach the species of *Pyrgella* in both these characters. Another character of *Pyrgella*, the presence of only one pair of dorsocentral bristles, occurs also in "*Epicerella*" in which Paramonov allows species with one to five pairs of such bristles. As the two species of *Pyrgella* conform in general with the large and somewhat varied assemblage of species included in *Epicerella*, there is no adequate reason for maintaining them in a separate genus.

Paramonov separated *Musgravena* from *Epicerella* on account of "a break in the costa (deep incision) at the apex of the subcostalis, hyaline wings, and extremely strange form of genitalia". The unique holotype of *M. anthonyi* has an unbroken costa (apart from the post-humeral incision), there being simply a rather strong bend at junction with the subcosta, which evidently misled Paramonov. The wing is no more completely hyaline than in several other species of "*Epicerella*". The structure of the female abdomen was misinterpreted by Paramonov and its peculiarities exaggerated. The segmentation is normal for a female pyrgotid. The apex of segment 7 is constricted and curved upwards whereas in other related species it is often constricted and decurved. The terminal structures in species of *Cardiacera* are quite diverse but sclerotized plates somewhat resembling the "claspers" of *M. anthonyi* are present in some, though usually retracted. I conclude that there is no satisfactory morphological basis for the separation of the genus *Musgravena* from *Cardiacera*.

Cardiacera dispar Macquart

Cardiocera dispar Macquart 1847: 92, figs 3-3c; Paramonov 1958a: 108-110, fig. 9 (after Macquart).

Epicerella plagiata Bezzi 1929: 11-12; Malloch 1929: 25; Paramonov 1958a: 124. **N. syn.**

The two nominal species are clearly synonyms from my examination of type material of both. The type locality of *C. dispar* is probably in the vicinity of Sydney, New South Wales, and not "Tasmanie" as given by Macquart (see McAlpine 1973: 180-181, for discussion of a similar case).

Type material examined: not individually labelled but placed above cabinet label "Cardiacera dispar. ♂ ♀ n.g. n.sp. Macq. Van Diemen. Macq. D. Exot. nomint" (lectotype ♂, here designated, the only extant syntype, Oxford). Sydney, New South Wales, 12.xi.1923 (holotype ♂ of *E. plagiata*, School of Public Health and Tropical Medicine, Sydney), anon.

Cardiacera guttipennis (Macquart), n. comb.

Epicerella guttipennis Macquart 1851: 294, pl. 27, fig. 9.

Examination of the now much damaged type shows this species to be very similar to *C. miliacea*, which Hendel made the type of a separate genus, *Parepicerella*. The type specimen differs from available specimens of *C. miliacea* in having one instead of two fronto-orbital bristles and in its larger size (length of wing c. 13.5 mm), but I am doubtful if it represents a separate species. The type cannot be run to *E. guttipennis* in Paramonov's key to species of *Epicerella*, as it has three hyaline spots in "pterostigma" and a spur or stump on vien 2, but it runs imperfectly to *E. miliacea.*

As with *C. dispar* the true type locality is probably in the vicinity of Sydney, but no closely similar specimen from the Sydney district is available to me.

Holotype ♂ (sex fide Macquart as abdomen now missing): "Tasmanie" (Oxford).

Cardiacera nova (Walker) n. comb.

Tetanocera nova Walker 1849: 1084-1085.
Musgravena nova Steyskal 1965: 447.

Steyskal, from study of type material of *T. nova* alone, considered this to be a senior synonym of *Musgravena anthonyi* Paramonov, 1958a. The late Dr Paramonov told me that he disagreed with this synonymy and that two closely related species were probably involved.

My own detailed study of type material of both *T. nova* and *M. anthonyi* seems to confirm Paramonov's view. As I have not had the two specimens under examination simultaneously, I must rely on a comparison of my detailed notes on the lectotype of *T. nova* with the holotype of *M. anthonyi. M. anthonyi* has no ocellar bristles, wheras distinct ocellars are present in *T. nova*; *M. anthonyi* has tawny humeral calli with some pale pruinescence, the colouring being similar to that of most of the mesoscutum, while in *T. nova* the humeral calli are pale yellowish, contrasting with the deeper reddish tawny mesoscutum; in

M. anthonyi the abdomen is nearly all black, in *T. nova* nearly all tawny; *M. anthonyi* is considerably larger than *T. nova.* It is also possible that there are differences in the bristling of abdominal segment 7. *M. anthonyi* has the posterior extremity of segment 7 (♀) dorsally with a dense tuft of long bristles or bristle-like hairs on each side, arising from a slight gibbosity, the median part near posterior margin being bare; in *T. nova,* according to my notes, the posterodorsal part of segment 7 is simply densely haired.

I conclude that the differences between these two specimens are too great to allow the likelihood of their being variants of the one species. I therefore restore *Cardiacera anthonyi* (Paramonov) n. comb. to the status of a valid species.

Lectotype ♀ (here designated) of *T. nova*: "New Holl... 1844-12" (British Museum (Natural History)), "Pres. by the Ent. Club". Walker referred to both sexes, but this is apparently the only syntype now existing.

List of new generic combinations

* *Toxura norrisi* (Paramonov), from *Paratoxura*
Cardiacera calabyana (Paramonov), from *Pyrgella*
Cardiacera carnei (Paramonov), from *Pyrgella*
Cardiacera anthonyi (Paramonov), from *Musgravena*
Cardiacera nova (Walker), from *Tetanocera, Musgravena*
Cardiacera punctulata (Hendel), from *Epicerella*
Cardiacera cribripennis (Bezzi), from *Acropyrgota, Epicerella*
* *Cardiacera norsemanica* (Paramonov), from *Epicerella*
* *Cardiacera inermis* (Paramonov), from *Epicerella*
* *Cardiacera bella* (Paramonov), from *Epicerella*
Cardiacera guttipennis (Macquart), from *Epicerella*
* *Cardiacera setosa* (Bezzi), from *Epicerella*
* *Cardiacera multipunctata* (Malloch), from *Epicerella*
* *Cardiacera montana* (Paramonov), from *Epicerella*
Cardiacera miliacea (Hendel), from *Epicerella, Parepicerella*
* *Cardiacera uniforma* (Paramonov), from *Epicerella*
* *Cardiacera campbelli* (Paramonov), from *Epicerella*
* *Cardiacera triangularis* (Malloch), from *Epicerella*
Cardiacera nigrescens (Paramonov), from *Epicerella*
* *Cardiacera acuticornis* (Paramonov), from *Epicerella*
Cardiacera strumosa (Bezzi), from *Epicerella*
Cardiacera minor (Bezzi), from *Epicerella*
Cardiacera maculipennis (Bezzi), from *Epicerella*
Cardiacera latifrons (Paramonov), from *Epicerella*
* *Cardiacera armipes* (Paramonov), from *Epicerella*
* *Cardiacera imitatrix* (Paramonov), from *Epicerella*
* *Cardiacera simulatrix* (Paramonov), from *Epicerella*
* *Cardiacera rava* (Paramonov), from *Epicerella*

Cardiacera barringtoni (Paramonov), from *Epicerella*
* *Cardiacera noctua* (Paramonov), from *Epicerella*
* *Cardiacera pilosocula* (Paramonov), from *Epicerella*
* *Cardiacera ocelligera* (Paramonov), from *Epicerella*
* *Cardiacera bourkei* (Paramonov), from *Epicerella*

The above combinations may be reasonably inferred from the new generic synonymy here established. Species which I have not examined in connection with the present work are marked with an asterisk (*). I am not prepared to recommend the transfer of any non-Australian species to *Cardiacera* without further study.

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